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Migrant Entrepreneurship and New Urban Economic Opportunities

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MIGRANT ENTREPRENEURSHIP AND NEW URBAN ECONOMIC OPPORTUNITIES

Identification of Critical Success Factors by Means of Qualitative Pattern Recognition Analysis

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Abstract

Nowadays, migrants form a significant share of the urban population, and their business is critical for urban economic growth. This paper addresses the key factors determining the position of migrant entrepreneurs in the urban economy in the Netherlands. In order to develop a solid assessment of CSFs for migrant entrepreneurs, and to understand business performance in a competitive urban environment, this study will investigate the entrepreneurial behaviour of migrants in Dutch cities from a micro-economic perspective by paying attention to the entrepreneurial behaviour of migrants, the role of their social networks, and the innovative potential of new growth markets in a city. Our research employs a comparative statistical analysis of empirical findings in order to map out opportunities, success conditions and bottlenecks for migrant entrepreneurs. Given our largely categorical database, we will employ a qualitative causal pattern recognition technique, viz. rough set analysis, to systematically assess the conditions for successful entrepreneurship of migrants.

KEY WORDS: *Migrant entrepreneurship, rough set analysis, critical success factors, categorical pattern recognition analysis*

1. Migrants in Business

Our globalizing world is increasingly showing the footprints of the high geographic mobility of people, ideas, information, capital and goods. This high degree of geographic interaction and spatial dynamics is clearly mirrored in recent high migration rates across national borders. Immigration towards large cities is indeed a contemporary and clearly visible phenomenon of growing socio-demographic importance in many countries. However, the influx of many foreign migrants is fraught with serious social tensions in various host countries caused by a wide variety of negative socio-cultural and economic externalities. Hence, we witness an increasing pressure to limit foreign migration on the grounds that the absorption capacity of host countries has been reached (see, e.g., Borjas, 2005; Dustmann and Glitz, 2005; Longhi et al., 2007). These negative externalities hold for both the housing market and the labour market in large agglomerations. Consequently, there is a tendency to see migrants more as a source of problems than as a source of new opportunities for the urban economy.

In an open and globalized world characterized by an increasing degree of urbanization, modern cities function as the habitat of international migrants whose involvement in the small and medium-sized enterprise (SME) sector creates a source of new jobs, business dynamism and innovation. Migrant entrepreneurs form a significant part of the SME sector in our cities and may hence be important vehicles for urban vitality. Usually, these migrant entrepreneurs have to work in an unfamiliar and risky business environment. Often, they tend to be risk-avoiding and hence concentrate on traditional market segments (e.g. markets for ethnic products). Consequently, they may be less entrepreneurially-oriented in terms of attitudes to risk concerning undertaking innovative business activities. Reliance on the social networks of their own socio-cultural group may guarantee a certain market share, but may at the same time hamper an outreach strategy towards new and innovative markets (e.g. high-tech/ICT). Woolcock (1998) claimed that the entrepreneurs reliance on their own migrant group and its related network is both developmental and destructive. According to Menzies et al. (2003), an orientation on their own group is actually mainly a benefit to migrant entrepreneurs. And Portes and Jensen (1989) referred to the positive effects of some degree of monopolistic power in migrant entrepreneurship stemming from better access to a relatively protected market. Nevertheless, Lyer and Shapiro (1999) suggested that competition amongst migrant entrepreneurs serving the same limited market niche may increase business failure, especially if the market size is relatively small.

It is evident that in recent years the awareness has grown that migrants may contribute significantly to economic vitality – especially of urban economies – if they are self-employed and innovative. And, therefore, we observe a rising interest in urban migrant (or ethnic) entrepreneurship. Several scholars – mainly in North-America – have studied the success conditions for entrepreneurs and the interplay between migrant entrepreneurship and its economic impact on cities (for earlier qualitative and anecdotal studies, see Jacobs, 1961). Most of these studies were carried out in the market-oriented system that prevails in the USA, but, in contrast to the USA far less empirical information is available on the success conditions for migrant entrepreneurs in European cities. Our study aims to fill this gap, by paying attention to cultural backgrounds, the role of social networks, and the innovative potential of new growth markets in a city. Besides this, many past studies on migrant entrepreneurship are generally based on small sample surveys, secondary databases, and case studies. There is a clear need for more comprehensive, solid quantitative empirical research in this field based on a larger sample of entrepreneurs, as well as for advanced research into the relative weight of critical success factors (CSFs) for business performance and entry conditions for growth markets amongst migrant entrepreneurs. Clearly, this type of research is not easy, as it is very difficult to obtain trust, cooperation and proper information from migrant entrepreneurs. According to Menzies et al. (2003), they are not predisposed to participation in (survey) research.

So, the main research question in the present paper is under which socio-cultural and economic conditions migrant entrepreneurs can develop a successful business by entering new market segments and hence contributing to a dynamic and innovative urban business climate, a situation that has been emerging already for some time in the US. A creative 'break-out' action line may strengthen the economic position of migrants and also contribute to urban vitality by offering new opportunities to cities in multicultural societies in the Netherlands. According to Baycan-Levent et al. (2004) a 'break-out' strategy in migrant entrepreneurship can be conceived of as a strategy to escape from the lock-in situation of a relatively small market niche in which a certain migrant group has a dominant socio-economic position regarding several strategic business factors (e.g. capital, clients, and employees). Although migrant entrepreneurship has received quite some attention in the international literature, there is still a need for a thorough and comprehensive quantitative study into the drivers of this

phenomenon in modern European cities. This paper aims to investigate the relationship between culture and social networks with a view to the identification of CSFs for business performance and entry into new business markets of migrant entrepreneurs of different ethnic origin in Amsterdam. This study is therefore, employing approaches from different disciplines, such as business administration, urban economics, geography, and the social sciences. It will be based on a broad survey questionnaire distributed to migrant entrepreneurs in the service sector in Amsterdam.

The present paper is organized as follows. Section 2 is devoted to a brief presentation of some key issues in migrant (or ethnic) entrepreneurship. Then, in Section 3 we will describe the empirical database resulting from a survey questionnaire distributed to entrepreneurs in Amsterdam. Section 4 then provides the statistical results from this investigation. Next, in Section 5 we present a recent technique from the artificial intelligence literature, viz. rough set analysis (RSA), in order to offer an explanatory non-parametric and qualitative model for dealing with causalities among categorically measured variables. Section 6 then assesses the results of our RSA for the CSFs for migrant entrepreneurship. Finally, Section 7 makes some retrospective and prospective research comments are offered.

2. Ethnic Entrepreneurship: A New Panacea for Urban Decay

Many cities in Europe have become pluriform and multicultural societies as a result of the structural influx of foreign migrants in the recent decades. In some cities in Europe, ethnic minorities are even tending to become a majority. Guest workers from the Mediterranean countries, refugees and asylum seekers from the Balkans, and economic migrants from Central and Eastern Europe have created a drastic change in the face of modern European cities (see Gorter et al., 1998). The influx of foreign migrants has certainly brought about economic advantages (e.g. the fulfillment of structural vacancies in various segments of the labour market), but it has also caused a multiplicity of social and economic tensions (e.g. in the local housing market, ghetto formation in cities, differences in lifestyle and behaviour, and socio-cultural stress situations) (see, e.g. Borjas 1990; Kloosterman et al., 1998; Pahl 1984; Pinch, 1993; Piore and Sabel, 1984). With only a few exceptions, ethnic groups belong in general to the lower socio-economic segment of European cities, mainly because these groups lack education and skills.

Their lower position on the socio-economic ladder has prompted them to search for other socio-economic possibilities, in particular self-employment. It is this movement that is generally referred to as 'ethnic (or migrant) entrepreneurship' (see, e.g., van Delft et al., 2000; Masurel et al., 2002; Min, 1987; Waldinger et al., 1990; Ward and Jenkins, 1984). After the first wave of orientation towards ethnic products, ethnic markets and customers, or indigenous ethnic business strategies, in recent years ethnic entrepreneurs have gradually become an indigenous and significant part of the local economy, especially in the big cities and metropolises, since an expansion of their market potential towards a much broader coverage of urban demand has occurred (see, e.g., Baycan-Levent et al., 2003; Choenni, 1997; van Delft et al., 2000; Greenwood, 1994; Masurel et al., 2002; Nijkamp, 2003; Min, 1987; Waldinger et al., 1990; Ward and Jenkins 1984). Ethnic entrepreneurs with their untapped job-creating potential offer, on the one hand, different approaches and management styles within urban economic life, which reflect their cultural diversity, and, on the other hand, many opportunities for urban revitalization/development of local economies, thereby increasing economic and cultural diversity, reducing unemployment and social exclusion, mitigating the problematic employment situation of young people in the ethnic segment, and raising living standards in ethnic groups that often belong to the more disadvantaged segments in the urban economy.

Migrant entrepreneurs are a heterogeneous group of businessmen and women and may differ in orientation, motivation and economic performance. Migrants are motivated to opt for entrepreneurship: to be independent, to be their own boss (propensity to take risks), to have extra income (profit), to gain some work experience, or to maintain family tradition; or they are dissatisfied with their previous job, need flexibility, want to make a career, or have ideological reasons (desire to innovate) or leadership qualities (Baycan-Levent et al., 2003). The most relevant personal characteristics mentioned in many studies to explain why migrants become self-employed are: their lower education level, their less favoured position as a result of low education and lack of skills, and, as a result, their high level of unemployment. The existence of migrant and social networks also plays a major role in their motivation, because it encourages migrants to start their own businesses.

Different migrant groups and different cultures can also show different features in terms of driving forces, motivation, performance, and success conditions. In the context of migrant entrepreneurship, several researchers have already highlighted the impact of different migrant group cultures on entrepreneurship. The cultural, socio-economic and psychological attributes of different

migrant groups affect their entrepreneurial behaviour. Migrant minorities may differ in terms of their reasons for migration, their religion, their language, their educational attainment, their demographic background (whether other relatives are in business or not) and their access to family business networks. However, the interaction between culture and migrant entrepreneurship is complex. Culture, in the form of a family tradition in business and strong family ties, has an impact on business entry motives, on the financing of new start-ups, and on the nature of the business chosen. Some aspects of culture like family tradition seem to have greater impact on entrepreneurship than others like religion (Basu and Altinay, 2002). Furthermore, there is some evidence to suggest that the interaction between culture and entrepreneurship may change over time, that is, between business entry and later business operations.

Although migrant groups display a great variation in motives, attitudes and behaviour, migrant enterprises and migrant entrepreneurs tend to have some similar characteristics (CEEDR, 2000; Deakins, 1999; Kloosterman et al., 1998; Lee et al., 1997; Masurel et al., 2002; Ram 1994). Researchers like Brush (1992), Buttner and Moore (1997), Fagenson (1993), Fischer et al. (1993) and Baycan-Levent et al. (2003) have investigated the individual characteristics of migrant entrepreneurs, such as their demographic background, motivations or educational and occupational experience as entrepreneurs. These studies show that, although there are some similarities in demographic and educational characteristics, and problems they have to cope with, there are also some differences in educational background, work experience, skills, business goals, and management styles.

The aspects of migrant entrepreneurs that have been most extensively studied in the literature are their motivations, the entrepreneurs' relationships with clients, and their acquisition of capital and labour. Masurel et al. (2003) distinguish some general features that are typically applicable to migrant entrepreneurs, e.g. informal and formal networks, clients, business financing, and workforce and geographical clustering. The most significant characteristics of migrant entrepreneurship in general are their client orientation and their access to capital and labour (Deakins, 1999). Generally speaking, migrant entrepreneurs are found to be small in terms of start-up capital, utilized labour, growth capital and turnover. These enterprises operate mainly in markets characterized by easy entry and strong competition (Rettab, 2001). In cases of information gathering or help in certain situations migrants make use of their own migrant groups. This is also referred to as their 'own group'. Usually, migrant entrepreneurs find a niche in their migrant community and start up in an ethically well-defined market, so as to provide typical services and products. An enclave economy can then positively affect the prospects of migrant entrepreneurs.

Besides having co-migrant clients, the migrant entrepreneur also has close relations with his/her own migrant group when it comes to the workforce, or business financing. Migrant entrepreneurs prefer hiring and supporting other migrants in their economic ventures as these entrepreneurs enjoy privileged access to the migrant labour and can frequently employ paternalistic arrangements to extract more labour, as well as pay lower wages (Razin, 1989). The migrant entrepreneur is also able to acquire financial capital and loan production resources from the informal networks. While native entrepreneurs usually borrow their starting capital from the bank, migrant entrepreneurs are less likely to receive bank funding than native entrepreneurs (Rath, 2000), and therefore often borrow capital from family or other group members. Migrant entrepreneurs usually less inclined to join up with native formal networks, like retailer groups, trade associations and franchise organizations. Within a city, foreign activities are usually concentrated in certain geographical clusters. We can find this geographical concentration especially in the bigger cities, because migrants start their businesses in places where there is already a large resident population of people with the same migrant background. This also holds for the Netherlands.

Since the early 1980s, self-employment has increased significantly amongst people of different migrant minority groups in the Netherlands. One out of five new businesses in the Netherlands is set up by a migrant entrepreneur. This group mostly works in the service sector and delivers high-quality products. This group takes risk more easily, since they are supported by their parents. Important facts about the increased (migrant) entrepreneurship in the Netherlands are as follows: (i) there are relatively more migrant entrepreneurs within the Netherlands than native entrepreneurs; (ii) between 1999 and 2004 the number of migrants with their own enterprise grew enormously by 44 percent. In comparison, the number of native entrepreneurs within the same period only grew by 2 percent; (iii) in the period 1999-2004 within the Netherlands the number of enterprises started by migrants was 15,000; (iv) in 1998 the number of enterprises led by migrants was still only 4,000, while in 2003 this number had increased to 10,000; (v) according to the Monitor Ethnic Entrepreneurship (Monitor Etnisch Ondernemerschap), in there were approximately 5,000 ethnic entrepreneurs (including one-man businesses), of whom nearly 10 percent belonged to the second generation; (vi) 15 percent of all

the ethnic enterprises are situated in the retail and catering sectors. In mid-2004, there were 124,500 entrepreneurs active in the retail industry, which includes 18,070 ethnic entrepreneurs; (vii) all together these nearly 125,000 entrepreneurs run 92,500 enterprises. Of these, approximately 16,200 enterprises can be described as ethnic enterprises.

Migrant entrepreneurs are a rapidly growing group of businessmen in modern urban economies and may contribute significantly to the vitality of cities. But what is their socio-economic performance? In which market niches are they successful? And which CSFs are responsible for their socio-economic position and business performance? This will be investigated later in this paper. But, first, the next section will briefly describe our empirical data on migrant entrepreneurs in Amsterdam.

3. Database on Migrant Entrepreneurs in Amsterdam

The sampling was restricted to those enterprises that are owned by first- and second-generation migrant entrepreneurs of different ethnic origin in the service sector in Amsterdam (e.g. consultancy, accountancy and tax offices). Due to privacy regulations it is not easy to identify in a formal way migrant entrepreneurs. The total sample included 83 respondents who were entrepreneurs of small and medium-sized enterprises in the service sector: namely, 35 Turks, 25 Moroccans and 23 Surinamese (see Table 1). Tables 1 and 2 show personal and entrepreneurial characteristics. In Table 3 we present an overview of the profile of the respondents and the Pearson Chi-Square (p-value) of the statistical difference.

Table 1: Personal characteristics of migrant entrepreneurs

	Number of entrepreneurs	Share in total (%)
Ethnic origin		
Moroccan	25	30
Surinamese	23	28
Turkish	35	42
Age		
20 – 25	11	13
26 – 30	24	29
31 – 35	20	24
36 – 40	15	18
41-	13	16
Gender		
Female	15	18
Male	68	82
Education level		
Secondary school level	11	13
Middle vocational training	12	14
Higher vocational training	30	37
University	26	31
Other	4	5
Marital status		
Unmarried	36	43
Married	39	47
Divorced	7	9
Unknown	1	1
Family status		
With children	42	51
Without children	41	49
Total	83	100

From Table 1, we can see that most entrepreneurs were in the age group of 26-30 (29 percent). However, this percentage was different for each migrant group. Most entrepreneurs of Turkish origin were in the age group 30-35 (11 percent), while most of the entrepreneurs of Moroccan origin were in the age group 25-30 (16 percent), and most of the Surinamese entrepreneurs were in the age group 35-39 (8 percent). We find a statistical outcome of 0.04 for the Pearson Chi-Square

value (see Table 3), so that we may conclude that the entrepreneurs do differ significantly from each other regarding their age. From this table, we can also derive that the entrepreneurs from different ethnic origin are mostly male (82 percent). The Pearson Chi-Square value in this case amounts to 0.956 (see Table 3), which indicates that there is no significant difference between the three groups investigated. Furthermore, we can derive that 37 percent of the respondents (total sample) have a high vocational education level. If we look at the University level, we can derive that 31 percent of the approached migrant entrepreneurs have a University level diploma. This means that, all together, most respondents went to a school with a high education level. When comparing the level of education for the three groups, in particular, we can conclude that in all groups most of the respondents have a level of education representing a high vocational education. For example, of the respondents 13.3 percent of the Turkish entrepreneurs, 15 percent of Moroccan entrepreneurs, and 8 percent of the Surinamese entrepreneurs, have a high vocational education level. However, if we only look at University education, we can conclude that most of the respondents of Surinamese origin went to University and have the highest level of education, viz. a university degree. The Pearson Chi-Square rate in this case appears to be 0.122 (see Table 3). We may thus conclude that overall the migrant entrepreneurs do not differ significantly from each other with respect to their education level.

In addition, the country of birth of the entrepreneurs was examined. 26 entrepreneurs of Turkish origin were born in Turkey, 13 entrepreneurs of Moroccan origin were born in Morocco, and 12 Surinamese entrepreneurs were born in Surinam. The Pearson Chi-Square value in this case is 0.0001 (see Table 3), which indicates that there is a significant difference between the groups in terms of their birthplace. Furthermore, a comparison was made between the sample groups regarding their marital status and children. From Table 1, we can conclude that most respondents were married and have one child. Most of the Moroccan and Surinamese entrepreneurs were unmarried, viz. 16 percent and 18 percent, respectively. The Pearson Chi-Square value in this case is 0.024 (see Table 3), which indicates that there is a significant difference between the groups regarding their marital status. Most of the Turkish entrepreneurs have 2 children, while most Moroccan and Surinamese entrepreneurs do not have children. This could be caused by their marital status. The Pearson Chi-Square value in this case is 0.038 (see Table 3), which indicates that there is a significant difference between the groups.

Table 2 shows entrepreneurs in the family by ethnic group. We can see that 58 respondents of different ethnic origin do not have an entrepreneur in the family (70 percent). Of these, 22 (26 percent) are Turkish entrepreneurs, 21 (25 percent) are Moroccan entrepreneurs, and 15 (18 percent) are Surinamese entrepreneurs. Only 25 (30 percent) of the entrepreneurs of different ethnic origin do have an entrepreneur in the family. Of these 13 are Turkish entrepreneurs, 4 are Moroccan entrepreneurs, and 8 are Surinamese entrepreneurs. The Pearson Chi-Square value is 0.18 (see Table 3), which indicates that there is no significant difference between the groups.

Table 2: Entrepreneurial characteristics of migrant entrepreneurs

	Share in total (%)	
	Yes	No
Entrepreneurs in family		
Total sample	30	70
Entrepreneurs in family by ethnic group		
Moroccans	16	84
Surinamese	35	65
Turkish	37	63
Network participation		
Total sample	37	63
Network participation of migrant entrepreneurs by ethnic group		
Moroccans	52	48
Surinamese	30	70
Turkish	31	69

Finally, we investigated the participation level in formal business networks (see also Table 2). Most of the Turkish and Surinamese entrepreneurs did not participate in such networks. On the other hand, 13 of the 25 Moroccan entrepreneurs did participate in such networks. The Pearson Chi-Square

value amounts to 0.4 (see Table 3), which indicates that there is no significant difference between the groups in the case of formal business network participation.

Trust in migrant networks is a subject worth examining further. For example: Why is the participation rate for migrant entrepreneurs relatively low with regard to formal networks such as franchise organizations? Whereas such organizations play an important role for native entrepreneurs, migrant entrepreneurs usually do not participate in them. It could be that 'trust' plays a role in this issue, but this is merely an assumption. We can explain the migrant dependency by trust. Clients from their own migrant group play a major role for migrant entrepreneurs. It is possible to reverse this notion and ask ourselves the question: 'Why do migrant customers prefer a service from the migrant entrepreneur?' The reason may be that both share the same language, culture and religion and can therefore communicate better. This brings about a closer bonding with each other, through which the aspect of 'trust' can be understood. Hereby the migrant entrepreneur can also satisfy the special needs of these types of customers, since they have a better knowledge than their native peers about which specific products are most appreciated by migrant customers.

Table 3: Pearson Chi-Square values of sample

Variables	Pearson Chi-Square
Age	0.04
Gender	0.956
Birthplace	0.0001
Education	1.22
Marital status	0.024
Children	0.038
Entrepreneur in family	0.18
Network participation	0.4

Table 3 presents an overview of the profile of the respondents and the Pearson Chi-Square (p-value) of the statistical difference. The Pearson Chi-Square value is used here in order to find out whether there is a statistically significant difference between the selected migrant groups. We will use a reliability level of 95%, which indicates that there is a significant difference when the outcome is below a p-value of 0.05. The groups only differ significantly from each other in terms of their age, birthplace, marital status and children. The corresponding p-values of these variables are contained in Table 3.

4. Statistical Results on Migrant Entrepreneurs in Amsterdam

In this section various results from standard statistical analyses will be presented. These results originate from a straightforward SPSS application, where we are interested in cross-correlations among the variables investigated (see Table 4).

Table 4: Group statistics of characteristics of migrant entrepreneurs

	PC* (3.35)			BC* (2.79)			NP* (1.59)			BP* (4.00)		
	TR	MR	SR	TR	MR	SR	TR	MR	SR	TR	MR	SR
N	35	25	23	35	25	23	35	25	23	35	25	23
Mean	3.44	3.39	3.17	2.93	2.69	2.69	1.63	1.48	1.65	4.12	3.95	3.88
Sd	.49	.42	.39	.47	.58	.49	.49	.51	.49	.55	.45	.41

PC*: Personal Characteristics

BC* Business Characteristics

NP*: Network Participation

BP*: Business Performance

N = 83

The first step is to investigate the correlation between the independent explanatory variables personal characteristics (PC) and business characteristics (BC). We performed a correlation analysis to investigate the relation between variables before carrying out the main regression analysis to investigate the influence of these variables on the dependent variable BP. We presume that PC and BC will positively correlate with each other. The significance of the results of an analysis was as expected; we observed a significant positive, but weak correlation between PC and BC of 0.072 (see Table 5). There was no observed significant correlation with network participation.

Next, we are interested in the causality relation between the explanatory variables BC, PC and network participation (NP), on the one hand, and the dependent variable business performance (BP), on the other. To estimate the strength of a modelled relationship between the independent variables PC and BC, and the dependent variable BP a regression analysis was carried out. The regression analysis results for the effect of PC and BC on BP indicate that there is a positive relationship between

these constructs. This means that, if the migrant entrepreneur has the appropriate personal and business characteristics, he or she will also have a higher score on business performance.

Table 5: Correlation between Explanatory Variables

		BC	PC	BP	NP
BC	Pearson Correlation	1	,198	-,077	,538
	Sig. (2-tailed)		,072	,000	,488
	N	83	83	83	83
PC	Pearson Correlation		1	,322**	-,097
	Sig. (2-tailed)			,003	,383
	N		83	83	83
BP	Pearson Correlation			1	-,028
	Sig. (2-tailed)				,801
	N			83	83
NP	Pearson Correlation				1
	Sig. (2-tailed)				
	N	83			83

Note: **.Correlation is significant at the 0.01 level (2-tailed).

Besides these positive relationships, the variable network participation has no significant (positive or negative) influence on BP (see also Table 6), while BC and PC have a significant impact (given the standard errors or t-values). To confirm the goodness of fit of this model and the statistical significance of the estimated parameters, we may examine the R-square (R^2) values. This is the proportion of variability in a data set that is accounted for by our statistical model. The R^2 increases as we increase the number of variables, and so it is also important to look for the adjusted R^2 that corrects the R^2 for the number of variables used in the model. The (adjusted) R^2 values are relatively low which is clearly due to the variability in our (relatively small) sample.

Table 6: Estimated Coefficients from Regression Analysis

Explanatory Variables	Unstandardized Coefficients		Standardized Coefficients	t
	Beta	Std.Error	Beta	
Intercept	1,869	,380		4,912
BC	,472	,089	,493	5,313
PC	,244	,101	,224	2,414

Note: a. Dependent Variable: BP

$R^2 = .337$

Adjusted $R^2 = .321$

This section has demonstrated the importance of several socio-demographic and socio-economic determinants of migrant entrepreneurship. In the next section, we offer an explanatory analysis of the drivers of successful migrant entrepreneurship, based on a recently developed qualitative classification method, called rough set analysis.

5. A Rough Set Analysis for Categorical Pattern Recognition of Business Performance of Migrant Entrepreneurs

Several data collected in our survey questionnaire are non-numerical in nature. They are often of a categorical nature, for instance, nominal data (e.g. country of origin, gender, marital status, education, etc.) or ordinal (e.g. high or low profits, rank order data on age categories, etc.). There is clearly a need to take such qualitative information into account. In such cases, the application of

traditional regression methods to identify the importance of various drivers for business performance is rather problematic. Nevertheless, it is important to extract common patterns of explanatory factors for the business performance of migrant entrepreneurs. Comparative case study research is an important vehicle for pattern recognition in the perception, attitude and behaviour of actors. Clearly, relevant case-study comparisons would ideally have to be based on quantifiable characteristics of the cases concerned, or at least on a systematic set of common or similar attributes that characterize in a qualitative sense the phenomenon concerned (see. Boelhouwer and van der Heijden, 1993; Ragin and Becker, 1993; and Yin, 1992).

Comparative research may concern various dimensions of a complex phenomenon. For example, it may refer to the inputs of a process (e.g. financial resources for education) in order to assess the efficiency. But it may also address the performance of a system by investigating output indicators (e.g. the success rate of medical treatment). And finally, comparative research may address the impacts of policies (e.g. the effects of training programmes on labour market participation). In all such studies, the main aim is to identify causal or explanatory patterns in the functioning of a common family of complex systems which exhibit considerable variation in space and time (see Pickvance 2001). Comparative study may originate from various sources of interest, such as testing a causal relationship, identifying whether a proposition in one given study is also applicable in other studies, exploring whether a critical condition in a given case result also holds somewhere else, or whether there are commonalities in causal structures and in empirical results in different case studies.

According to Pickvance (2001), there is a variety of comparative analyses, such as individualizing comparison (searching for contrasts), universalizing comparison (seeking common elements), variation-finding comparison (searching for systematic differences), and encompassing comparison (searching for attributes as a function of varying relationships in the entire system). At the same time, there are also various caveats in using comparative analysis, in particular the need for conceptual equivalence (looking for commensurable rather than identical objects), the need to find a blend between the identification of the uniqueness and the generality of objects, and the need for a largely similar research design and methodology to be used (see Bal and Nijkamp, 2000).

In recent decades, a wide variety of methods for exploratory or explanatory categorical data analysis have been developed, such as rank-order correlation methods, discrete choice models, qualitative multicriteria models, ordinal correspondence analysis, and so forth. In our study, we use rough set analysis (RSA) as a tool for analysing the categorical data from our survey questionnaire distributed to migrant entrepreneurs.

RSA originates from the family of artificial intelligence methods and aims to identify regularities (or patterns) in the simultaneous occurrence of events (or phenomena) characterized by categorical information on distinct characterizing attributes. Detailed treatment of RSA can be found, inter alia, in Pawlak (1991, 2001). RSA is a qualitative modelling tool that serves to identify under what conditions (i.e. qualitative states of attributes of a phenomenon) a certain qualitative outcome (often called the 'decision variable') will result. Thus, RSA is essentially based on a set of conditional ('predictive') statements of an 'if..., then' nature. RSA is a deterministic classification method to convert imprecise or incomplete information (often alpha-numerical or nominal) into structured knowledge based on a classification of attributes and decision variables into distinct classes which may have a varying degree of 'granularity' (see Pawlak, 1991, 2001; Slowinski, 1993). The notion of 'granularity' refers to the width (or 'refinedness') of a class of characterizing features (e.g. small-large versus small-medium-large), as classification results (in an exploratory or explanatory sense) may be sensitive to class widths.

RSA has a series of technical terms (such as equivalence, indiscernibility, reducts, lower and upper approximation, core, multi-attribute sorting) which will only be very briefly be described here. Objects in RSA are regarded as similar (or indiscernable), if their characteristic features (attributes) all fall in the same distinct equivalence class ('granules'). Two concepts are often used in RSA, viz. lower and upper approximation. The lower approximation of a set S is the union of all elementary sets that are a subset of S . In contrast, the upper approximation is the union of all elementary sets that have a non-empty intersection with S .

The main question is now whether it is possible to use an 'attribute reduction' in order to identify a smaller set of attributes that have the same classificatory power as the original set of attributes. Here two concepts are important, viz. a core and a reduct. A reduct is a subset of attributes and may be interpreted as necessary part of the subset of all attributes that enables us to discern all objects in our set. This means that adding another attribute to a *reduct* does not imply a better classification of objects. In other words, the reducts represent all combinations of explanatory variables (attributes) which completely determine the variation in the dependent variable (decision variable). A

core is a common item across all reducts and thus shows up in all classifications. The core thus represent the set of all variables (attributes) that show up in all reducts. We may then try to reduce the information table encompassing all objects, their attributes (independent explanatory variables) and the decision variable (dependent variable to be explained) in order to construct decision rules which link the classified (nominally coded) attributes to the presence of a given decision variable in a pre-coded class.

We may now try to identify combinations of classified attributes from our sample that are necessary for the existence of a decision variable in a coded form. This cross-classification can be represented in 'if....then.....' statements which are nothing else than conceptual-qualitative causal predictive statements. It is evident that attributes present in the core of an RSA have the highest explanatory value, as these are in all cases necessary to understand or highlight the variation in the classification of decision variables. Thus, the frequency of appearance of attributes in decision rules (i.e., in 'if....then....' statements) is an indication of the causal explanatory power of the attributes concerned.

RSA has been applied on several occasions for comparative purposes in social science research. Examples can be found in, inter alia, Baaijens and Nijkamp (2000), Baycan-Levent and Nijkamp (2007a,b), van den Bergh et al. (1998), Nijkamp and Pepping (1998a, 1998b), and Nijkamp et al. (2002a, 2002b). In the present paper, which is devoted to comparative assessment of the performance of migrant entrepreneurs, we employ RSA, in particular, since many of our interview data are nominal in nature.

6. Assessment of Critical Success Factors by Means of Rough Set Analysis

The application of rough set analysis proceeds in two steps: (i) the construction of an information survey; and (ii) the classification of information contained in the survey. In our case, the information survey consisted of the entrepreneurial characteristics of migrant entrepreneurs of Moroccan, Surinamese and Turkish origin in terms of their motivation factor, business characteristics, internal and external success conditions, and performance (Table 7). In our analysis, we are particularly interested in the question whether the three dominant migrant entrepreneurship groups (Moroccans, Surinamese and Turks) have significant differences in critical success conditions for their business performance. Hence, we present the RSA results for each of these distinct groups. The next step, the classification of information contained in the survey, is one of the most problematic issues in the application of rough set analysis, as the chosen thresholds are not always unambiguous, and hence may also lead to information loss. In general, some sensitivity analysis on the classification used is meaningful, as a balance needs to be found between homogeneity and class size. In our case, after some sensitivity analyses the categories for each relevant attribute were defined, and these are listed in Table 7. Next, on the basis of these categories, the resulting coded information table was constructed for Moroccan, Surinamese and Turkish entrepreneurs (see tables in Annex I).

As can be seen in Table 7, our rough set framework consists of 29 variables of which 28 are attribute (conditional) variables, and only 1 of them is a decision variable. The *performance* variable is used as a decision variable, which refers to market share, growth in turnover and profit of the entrepreneur. The attributes of the migrant entrepreneurs include: their *personal characteristics* (e.g. age, gender, generation, education level); *motivation factors* (e.g. need for achievement, locus of control, risk-taking propensity); *size of enterprise* (number of full-time and part-time employees); *internal success conditions* (e.g. commitment/dedication, culture of enterprise, administration, reliability, market knowledge, customer service, personnel, quality); *external success conditions* (e.g. applicable products and services (P&S), availability of finance, market expectations, innovation); and *leadership* (negotiation skills, communication skills, managerial skills, customer relationships, financial knowledge, market orientation).

The motivation factors refer to need for achievement, locus of control, and risk-taking propensity. According to McClelland (1961), *achievement motivation* is a strong psychological driving force behind human action, and it can be defined 'as behaviour towards competition with a standard of excellence'. The motivation factor *locus of control* refers to the perceived control over the events in one's life (Rotter, 1966). An entrepreneur's *risk-taking propensity* can be defined as his or her orientation towards taking chances and risks in uncertain decision-making contexts. In this case, the motivation factor has three dimensions, which measure, respectively, an entrepreneur's belief in this attribute by asking him or her to rate the importance of need for achievement, locus of control, and risk-taking propensity. The importance of the attributes *motivation factor* and *leadership* are measured by presenting entrepreneurs different propositions about the attributes with respect to three different dimensions: agree, neutral, and disagree. The attributes *internal success conditions* and *external*

success conditions are measured by presenting entrepreneurs different propositions about these attributes with the three dimensions: important, neutral, and unimportant.

Table 7: Classification of explanatory variables/attributes

ATTRIBUTES*		
PERSONAL CHARACTERISTICS	A10. Number of part-timers	A20. Availability of finance
A1. Ethnic Origin	1 = no employee	1 = unimportant
TR: Turkish	2 = 1 – 5	2 = neutral
MR: Moroccan	3 = 6 – 25	3 = important
SR: Surinamese	4 = 26 >	A21. Market expectations
A2. Age		1 = unimportant
1 = <20	INTERNAL SUCCESS FACTORS	2 = neutral
2 = 21-30	A11. Commitment/dedication	3 = important
3 = 31-40	1 = unimportant	A22. Innovation
4 = 41>	2 = neutral	1 = unimportant
A3. Gender	3 = important	2 = neutral
1= male	A12. Culture of enterprise	3 = important
2= female	1 = unimportant	
A4. Generation	2 = neutral	LEADERSHIP
1 = first generation	3 = important	A23. Negotiation skills
2 = second generation	A13. Administration	1 = disagree
A5. Education Level	1 = unimportant	2 = neutral
1 = elementary school	2 = neutral	3 = agree
2 = secondary education	3 = important	A24. Communication skills
3 = MBO (vocational)	A14. Reliability	1 = disagree
4 = HBO(high vocational)	1 = unimportant	2 = neutral
5 = university	2 = neutral	3 = agree
	3 = important	A25. Managerial skills
MOTIVATION FACTORS	A15. Market Knowledge	1 = disagree
A6. Need for Achievement	1 = unimportant	2 = neutral
1 = disagree	2 = neutral	3 = agree
2 = neutral	3 = important	A26. Customer Relationships
3 = agree	A16. Customer Service	1 = disagree
A7. Locus of Control	1 = unimportant	2 = neutral
1 = disagree	2 = neutral	3 = agree
2 = neutral	3 = important	A27. Financial Knowledge
3 = agree	A17. Personnel	1 = disagree
A8. Risk-taking Propensity	1 = unimportant	2 = neutral
1 = disagree	2 = neutral	3 = agree
2 = neutral	3 = important	A28. Market Orientation
3 = agree	A18. Quality	1 = disagree
	1 = unimportant	2 = neutral
SIZE OF ENTERPRISE	2 = neutral	3 = agree
A9. Number of full-timers	3 = important	
1 = no employee		PERFORMANCE
2 = 1 – 5	EXTERNAL SUCCESS FACTORS	D1. Market; Growth; Profit
3 = 6 – 25	A19. Applicable P&S	1 = decreased
4 = 26 >	1 = unimportant	2 = stable
	2 = neutral	3 = increased
	3 = important	

Note: * A: condition attribute, D: decision attribute.

The ROSE software is used for each of these decision and attribute variables independently, and the results of the analysis are evaluated on the basis of these decision variables in order to highlight the determining factors (conditional attribute variables) behind the business performance of migrant entrepreneurs of Moroccan, Surinamese and Turkish origin. Although the ROSE software is used independently for each group, the results of the rough set analysis are given in the same tables in order to see the results together and to compare the similarities and differences between the groups.

Next, in the technical application of the rough-set analysis, we calculated three main sets of indicators and outputs, viz. (i) the reducts and the core; (ii) the lower and upper approximation; and (iii) rules.

1. *The reduct* — in other words, a minimal set of attributes — is the smallest minimal subset which ensures the same quality of classification as the set of all attributes. The intersection of all reducts/minimal subset (in other words, an attribute that appears in all minimal sets) is defined as the core. The core is a collection of the most significant attributes for the classification in the system. For our data set, no core attribute is found, and with a limitation on the number — in order to get the most concise results — ten sets of reducts were found for each group of migrant entrepreneurs. The reducts for each set of data on the basis of the decision variable for Moroccan, Surinamese and Turkish entrepreneurs are given in Table 8. Next, the relative frequencies of appearance of the condition attributes in the reducts for each data set are given in Table 9.

When we examine the relative frequencies of appearance of the condition attributes in the reducts for each group, the results show that there are some similarities but also some differences between the groups. The relative frequencies of appearance of the condition attributes in the reducts for the data set on Moroccan entrepreneurs show that *A25 (managerial skills)*, *A23 (negotiation skills)*, *A22 (innovation)*, *A27 (financial knowledge)* and *A24 (communication skills)* appear as relatively important attributes with higher frequency rates. This means that these attributes strongly influence the performance and success level of Moroccan entrepreneurs. The relative frequencies of appearance of the condition attributes in the reducts for the data set on Surinamese entrepreneurs show that *A23 (negotiation skills)*, *A28 (market orientation)*, *A25 (managerial skills)*, and *A22 (innovation)* appear as relatively important attributes with higher frequency rates that strongly influence the performance and success level of Surinamese entrepreneurs, whereas the relative frequencies of appearance of the condition attributes in the reducts for the data set on Turkish entrepreneurs show that *A26 (customer relationships)*, *A10 (number of part-time employees)*, *A13 (administration)*, *A23 (negotiation skills)* and *A25 (managerial skills)* appear as relatively important attributes with higher frequency rates that strongly influence the performance and success level of Turkish entrepreneurs.

A comparative evaluation of the results show that two conditional attributes *A23 (negotiation skills)* and *A25 (managerial skills)* are common, and the most important, attributes for all three groups with very high frequencies of appearance. *A22 (innovation)* appears as another common attribute for Moroccan and Surinamese entrepreneurs. Besides these common attributes that influence the performance and success level of three groups of migrant entrepreneurs, there are some different attributes that seem to be important for each group. These different attributes are of special importance as they reflect the cultural differences, priorities, and different value systems between the groups. While *A24 (communication skills)* and *A27 (financial knowledge)* are important attributes for Moroccan entrepreneurs, *A28 (market orientation)* is of importance for Surinamese entrepreneurs and *A10 (number of part-time employees)*, *A13 (administration)*, and *A26 (customer relationships)* appear as important attributes for Turkish entrepreneurs. It seems Moroccan and Surinamese entrepreneurs are much more oriented to the market situation, as well as to the external success factors and leadership, whereas Turkish entrepreneurs are much more oriented to internal success factors such as the management of the relationships with employees and customers. As an indicator of external success, innovation is an important factor for Moroccan and Surinamese entrepreneurs, whereas Turkish entrepreneurs do not show any orientation towards innovation.

2. *The lower and upper approximation* — and derived accuracy of relationships for each value class of the decision variable — is another indicator from a rough set analysis. This indicator is the lower divided by the upper approximation of each class. Accuracy and quality of classification can also be derived from the choice of thresholds. The accuracy and quality of the classification for Moroccan, Surinamese and Turkish entrepreneurs are given in Table 10.

For all classes of performance for Moroccan and Surinamese entrepreneurs, the accuracy appears to be 1. Also the accuracy and quality of classification are equal to 1. This value is the maximum value in all these cases. This means that, on the basis of the chosen performance or success factor, the variables in our sample for Moroccan and Surinamese entrepreneurs are completely clear regarding the classes of decision variables. However, the accuracy and quality of classification for the performance of Turkish entrepreneurs appears different from 1. This stems from the attribute *A23 (negotiation skills)* that determines both increase in the performance and stable situation, two different categories, for Turkish entrepreneurs (see the rules below).

3. The rules — exact or approximate relationships between explanatory variables and dependent variables — offer the possibilities to extract conditional causal structures from our data set. Decision rules are conditional statements that are expressed in the form of 'if-then' statements. A rule

may be exact or approximate. An exact (or deterministic) rule guarantees that a particular combination of categories of the condition attributes results in only one particular category of the decision attribute (same conditions, same decisions). An approximate (or non-deterministic) rule, on the other hand, states that a particular combination of categories of the condition attributes corresponds to more than one category of the decision attribute (same conditions, different decisions). Therefore, only in the case of exact rules, using the information contained in the decision table, is it always possible to state with certainty whether an object belongs to a certain class of the decision variable. The quality of the decision rule is indicated by its strength. The strength of a rule represents the number of observations or cases that are in accordance with that rule. Table 11 shows the rules and their strengths that can be generated from our data set for Moroccan, Surinamese and Turkish entrepreneurs. We only use the rules with strength of 4 or more. This means that the relation described in the rule appears at least 4 times in the data set, but in some cases it also appears 7 or 12 times. Therefore, we selected the most significant rules, i.e. those that have a higher strength in terms of the number of cases matching the rule. This information enables us to classify migrant entrepreneurs according to conditions under which they are successful and which kind of similarities and differences can be found between them.

Table 8: Found reducts for Moroccan, Surinamese and Turkish entrepreneurs

	Moroccan Entrepreneurs		Surinamese Entrepreneurs		Turkish Entrepreneurs
1:	{A11, A19, A25, A26}	1:	{A17, A21, A22, A23, A27, A28}	1:	{A10, A13, A23, A24, A25, A26}
2:	{A19, A20, A23, A25, A26}	2:	{A13, A14, A22, A23}	2:	{A10, A13, A18, A23, A25, A26}
3:	{A19, A21, A22, A23, A25, A27}	3:	{A13, A18, A22, A23, A25, A28}	3:	{A10, A13, A21, A23, A26, A28}
4:	{A10, A21, A22, A23, A25, A27}	4:	{A13, A22, A23, A24, A25, A28}	4:	{A10, A13, A22, A23, A26}
5:	{A19, A21, A23, A25, A26}	5:	{A16, A22, A23, A25, A28}	5:	{A10, A13, A17, A24, A25, A26}
6:	{A12, A14, A24, A25, A26}	6:	{A17, A22, A23, A25, A28}	6:	{A9, A17, A21, A22, A25, A26, A28}
7:	{A11, A22, A24, A25, A27}	7:	{A12, A23, A25, A28}	7:	{A10, A13, A17, A25, A26, A27}
8:	{A12, A22, A23, A24, A25, A27}	8:	{A13, A23, A25, A27, A28}	8:	{A10, A13, A23, A25, A26, A27}
9:	{A20, A22, A23, A24, A25, A27}	9:	{A16, A23, A25, A27, A28}	9:	{A9, A17, A22, A23, A25, A26}
10:	{A21, A22, A23, A24, A25, A27}	10:	{A17, A23, A25, A27, A28}	10:	{A10, A13, A23, A26, A27, A28}

Table 9: Frequency of attributes in reducts for Moroccan, Surinamese and Turkish entrepreneurs

Moroccan entrepreneurs			Surinamese entrepreneurs			Turkish entrepreneurs		
Attribute	Frequency (#)	Frequency (%)	Attribute	Frequency (#)	Frequency (%)	Attribute	Frequency (#)	Frequency (%)
A11	2	20.00	A17	3	30.00	A10	8	80.00
A19	4	40.00	A21	1	10.00	A13	8	80.00
A25	10	100.00	A22	6	60.00	A23	7	70.00
A26	4	40.00	A23	10	100.00	A24	2	20.00
A20	2	20.00	A27	4	40.00	A25	7	70.00
A23	7	70.00	A28	9	90.00	A26	10	100.00
A21	4	40.00	A13	4	40.00	A18	1	10.00
A22	6	60.00	A14	1	10.00	A21	2	20.00
A27	6	60.00	A18	1	10.00	A28	3	30.00
A10	1	10.00	A25	8	80.00	A22	3	30.00
A12	2	20.00	A24	1	10.00	A17	4	40.00
A14	1	10.00	A16	2	20.00	A9	2	20.00
A24	5	50.00	A12	1	10.00	A27	3	30.00

Legend:

A9: Number of full-timers
A10: Number of part-timers
A11: Commitment/dedication
A12: Culture of enterprise
A13: Administration
A14: Reliability
A16: Market knowledge

A17: Personnel
A18: Quality
A19: Applicable P&S
A20: Availability of finance
A21: Market expectations
A22: Innovation
A23: Negotiation skills

A24: Communication skills
A25: Managerial skills
A26: Customer relationships
A27: Financial knowledge
A28: Market orientation

Note: Bold print in the table indicates the most important attributes for success.

Table 10: Accuracy and quality of the classification for Moroccan, Surinamese and Turkish entrepreneurs

Moroccan entrepreneurs			
Class	Accuracy	Lower approximation	Upper approximation
1	1	1	1
2	1	9	9
3	1	15	15
Accuracy of classification:		1	
Quality of classification:		1	
Surinamese entrepreneurs			
Class	Accuracy	Lower approximation	Upper approximation
1	1	2	2
2	1	8	8
3	1	13	13
Accuracy of classification:		1	
Quality of classification:		1	
Turkish entrepreneurs			
Class	Accuracy	Lower approximation	Upper approximation
1	-1.0000	0	0
2	0.8333	10	12
3	0.9200	23	25
Accuracy of classification:		0.8919	
Quality of classification:		0.9429	
NOTE: The accuracy for each class is the lower divided by the upper approximation. The accuracy and quality of classification for Turkish entrepreneurs is different from 1 because the attribute A23 determines both an increase in the performance and a stable situation, two different categories, see the rules in Tables 11 and 12 below.			

Table 11: Rules generated by the rough set analysis for Moroccan, Surinamese and Turkish entrepreneurs

Rules	Description of rules	Strength (#)	Strength (%)
Moroccan entrepreneurs			
rule 1	(A5 = 3) & (A21 = 3) => (Dec1 = 2)	5	55.56
rule 2	(A23 = 2) & (A25 = 2) => (Dec1 = 2)	4	44.44
rule 3	(A11 = 3) & (A19 = 3) & (A26 = 3) => (Dec1 = 3)	12	80.00
Surinamese entrepreneurs			
rule 1	(A8 = 3) & (A10 = 1) => (Dec1 = 2)	5	62.50
rule 2	(A4 = 2) & (A6 = 3) & (A17 = 3) => (Dec1 = 3)	7	53.85
rule 3	(A2 = 3) & (A3 = 1) & (A12 = 3) => (Dec1 = 3)	6	46.15
Turkish entrepreneurs			
rule 1	(A9 = 3) & (A23 = 3) => (Dec1 = 2)	4	36.36
rule 2	(A4 = 1) & (A13 = 3) & (A26 = 3) => (Dec1 = 3)	7	29.17
rule 3	(A17 = 3) & (A22 = 2) => (Dec1 = 3)	6	25.00
rule 4	(A10 = 2) & (A12 = 3) & (A18 = 3) => (Dec1 = 3)	7	29.17
rule 5	(A7 = 1) & (A14 = 3) & (A23 = 3) => (Dec1 = 3)	7	29.17

Table 12 describes the significant rules and the level of performance of Moroccan, Surinamese and Turkish entrepreneurs. When we evaluate the rules generated by the rough set analysis for each group, an overall evaluation of the decision rules for Moroccan entrepreneurs shows that especially seven condition attributes, viz., *A5 (education level)*, *A11 (commitment/dedication)*, *A19 (applicable products and services)*, *A21 (expectations of market)*, *A23 (negotiation skills)*, *A25 (managerial skills)* and *A26 (customer relationships)* determine the performance and success level of Moroccan entrepreneurs. On the one hand, a combination of: the importance given to (i) commitment/dedication, (ii) applicable products and services and (iii) customer relationships lead to an increase in the performance and success level of Moroccan entrepreneurs in terms of market share, growth in turnover and profit. On the other hand, a combination of: (i) a medium vocational level of education, as well as (ii) importance given to expectations of the market and a neutral approach to (iii) negotiation skills and (iv) managerial skills lead to a stable situation in the market.

An overall evaluation of the decision rules for Surinamese entrepreneurs shows that especially eight condition attributes, viz., *A2 (age)*, *A3 (gender)*, *A4 (generation)*, *A6 (need for achievement)*, *A8 (risk propensity)*, *A10 (number of part-time employees)*, *A12 (culture of enterprise)* and *A17 (personnel)* determine the performance and success level of Surinamese entrepreneurs. On the one hand, a combination of: (i) being in the age category of 31-40, (ii) being male, (iii) belonging to the second generation, (iv) being motivated by the need for achievement, (v) importance given to culture of enterprise and (vi) importance given to personnel lead to an increase in the performance and success level of Surinamese entrepreneurs in terms of market share, growth in turnover and profit. On the other hand, a combination of: (i) have a motivation of risk propensity and (ii) having no employees lead to a stable situation in the market.

However, an overall evaluation of the decision rules for Turkish entrepreneurs shows that especially 12 condition attributes, viz., *A4 (generation)*, *A7 (have a motivation of locus of control)*, *A9 (number of full-time employees)*, *A10 (number of part-time employees)*, *A12 (culture of enterprise)*, *A13 (administration)*, *A14 (reliability)*, *A17 (personnel)*, *A18 (quality)*, *A22 (innovation)*, *A23 (negotiation skills)* and *A26 (customer relationships)* determine the performance and success level of Turkish entrepreneurs. On the one hand, a combination of: (i) belonging to the first generation, (ii) being motivated by having locus of control, (iii) having part-time employees, importance given to (iv) culture of enterprise, (v) administration, (vi) reliability, (vii) personnel, (viii) quality, (ix) innovation, (x) negotiation skills, and (xi) customer relationships lead to an increase in the performance and success level of Turkish entrepreneurs in terms of market share, growth in turnover and profit. On the other hand, a combination of: (i) having 6-25 full-time employees, and (ii) having negotiation skills lead to a stable situation in the market. Here this stable situation should be seen as a positive and a successful situation in the market.

When we evaluate the performance and success level of Moroccan, Surinamese and Turkish entrepreneurs in a comparative way, first we can say that these 3 groups are quite different from each other in terms of both their success level and critical success conditions. In general, there is no big failure in terms of a decrease in the performance level of three groups in our sample. However, the stable situation is relatively higher for Moroccan and Surinamese entrepreneurs, whereas an increase in the performance level is the highest for Turkish entrepreneurs (see Table 13 and Annex II). Of course, care should be taken when considering this stable situation, as stabilization can depend on both positive success factors, such as a high level of experience, a large size of enterprise, the longevity of the enterprise, and negative factors, such as the very small size of an enterprise with no employees, and lack of experience and necessary skills.

The most interesting results stem from the critical success conditions for three groups in our sample. The results show that there are different approaches and different value systems for Moroccan, Surinamese and Turkish entrepreneurs. First of all, the first critical success factor is different for each of the three groups. While managerial skills appears as the most important factor for Moroccan entrepreneurs, negotiation skills is the most important factor for Surinamese entrepreneurs and customer relationships appears as the first priority for Turkish entrepreneurs. As mentioned earlier, two factors, managerial skills and negotiation skills, are the common critical success factors for all groups. Innovation is another common factor for Moroccan and Surinamese entrepreneurs. However, the importance given to financial knowledge and communication skills by Moroccan entrepreneurs differentiates this

group from the other groups. The market orientation of Surinamese entrepreneurs appears as a distinctive feature of this group. Turkish entrepreneurs, on the other hand, are distinguished by a completely different feature with the importance given by them first to customer relationships, and, secondly, to business administration and part-time employees (Table 14). Our comparative evaluation clearly shows that there are some culture-based differences between Moroccan, Surinamese and Turkish entrepreneurs in their perception of business, as well as in the critical success conditions that determine their performance level.

Table 12: Description of significant rules and level of performance of Moroccan, Surinamese and Turkish entrepreneurs

RULES	IF				THEN
Moroccan Entrepreneurs					
Rule 1	education level: middle vocational	+	market expectation: important		performance: stable
Rule 2	negotiation skills: neutral	+	managerial skills: neutral		performance: stable
Rule 3	commitment: important	+	applicable P&S: important	+	customer relationships: agree performance: increased
Surinamese Entrepreneurs					
Rule 1	risk-taking propensity: agree	+	number of part-timers: no part-timers		performance: stable
Rule 2	generation: second	+	need for achievement: agree	+	personnel: important performance: increased
Rule 3	age: 31-40	+	gender: male	+	culture of enterprise: important performance: increased
Turkish Entrepreneurs					
Rule 1	number of full-timers: 6-25	+	negotiation skills: agree		performance: stable
Rule 2	generation: first	+	administration: important	+	customer relationships: agree performance: increased
Rule 3	personnel: important	+	innovation: neutral		performance: increased
Rule 4	number of part-timers: 1-5	+	culture of enterprise: important	+	quality: important performance: increased
Rule 5	locus of control: disagree	+	reliability: important	+	negotiation skills: agree performance: increased

Table 13: Performance and success level of 3 migrant entrepreneur groups

Performance level (market share, growth in turnover, profit)	Moroccan	Surinamese	Turkish
Decrease	1 (4%)	2 (9%)	0 (0%)
Stable	9 (36%)	8 (35%)	11 (31%)
Increase	15 (60%)	13 (56%)	24 (69%)

Table 14: Critical success conditions for 3 migrant entrepreneur groups

Rank order of critical Success conditions	Moroccan	Surinamese	Turkish
1	managerial skills	negotiation skills	customer relationships
2	negotiation skills	market orientation	part-time employees administration
3	innovation financial knowledge	managerial skills	negotiation skills managerial skills
4	communication skills	Innovation	

7. Retrospect and Prospect

In recent years, we have witnessed an increasing trend towards, and interest of migrants, in self-employment or entrepreneurship. The phenomenon of migrant entrepreneurship deserves more in-depth profound scientific investigation, on the basis of, inter alia, comparative studies in terms of incubator conditions and critical success factors (CSFs) for a promising and efficient business performance. Given the growing importance of entrepreneurship, there is practical value in being able to identify critical entrepreneurial

characteristics. Due insight into entrepreneurial behaviour and the relative performance of migrants is needed to develop an effective business policy, in which migrants are seen as a source of new socio-economic opportunities, for both the migrant groups and the city concerned. Strategic information is also necessary for the development of fine-tuned policy strategies for enhancing the participation of traditionally less-privileged groups and for improving their business performance potential.

In this study we were particularly interested in the question whether the three dominant migrant entrepreneur groups (Moroccans, Surinamese and Turks) in the Netherlands have significant differences in critical success conditions for their business performance. Hence, we have presented both the RSA results for each of these distinct groups and an overall comparative evaluation for three groups of migrant entrepreneurs. The results of our own analysis, based on rough set analysis, show that the CSFs in performance (e.g. market share, change in turnover, profit) differ among the migrant groups. Our comparative evaluation clearly shows that there are some culture-based differences among Moroccan, Surinamese and Turkish entrepreneurs in their perception of business, as well as in the CSFs that determine their performance level. The results of our analysis show that Moroccan and Surinamese entrepreneurs are much more oriented to the market situation, as well as to external success factors and leadership, whereas Turkish entrepreneurs are much more oriented to internal success factors such as management of the relationships with employees and customers. However, surprisingly it seems the orientation towards internal success factors contributes much more to the success level or to an increase in performance rather than external success factors or leadership.

It should be noted, however, that the findings discussed above are certainly provisional and call for more solid research. For further research, it will be interesting to examine the possible background behind differences in performance and efficiency rates amongst migrant entrepreneurs. The possible reason for low, or differences in, efficiency rates amongst migrant entrepreneurs may be the limited potential for growth of their market niches, because they appear to operate in limited markets. Other reasons for their low efficiency rate may be less labour (-market) experience and lack of entrepreneurial experience. Moreover, they are most often not aware and do not make use, of support facilities provided by the Dutch government.

A way to improve possibilities for migrant entrepreneurs in Amsterdam is for them to go beyond their own ethnic frontiers and expand their activities into broader and other market segments and business lines, competing or associating with the native Dutch entrepreneur in their own markets. This new strategy may need improvement of their skills and knowledge of the Dutch language. Here established associations can play a role in order to improve the relationship between migrant entrepreneurs and private and public institutions in the Netherlands.

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ANNEX I. CODIFICATION OF INFORMATION ON MIGRANT ENTREPRENEURS

TABLE I: Coded table on Moroccan entrepreneurs

ORG.	A	S	G	E	Personal			Size		Internal Success								External Success				Leadership						
A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12	A13	A14	A15	A16	A17	A18	A19	A20	A21	A22	A23	A24	A25	A26	A27	A28	D1
1.MR	2	2	2	3	3	2	3	2	1	2	2	3	3	3	3	2	2	3	3	3	3	3	3	3	1	1	3	2
2.MR	3	1	1	5	2	2	2	3	2	3	2	3	3	3	3	3	3	3	3	3	3	3	1	2	3	1	3	3
3.MR	2	1	1	5	2	2	2	1	2	2	2	1	2	3	3	3	3	3	3	3	3	2	1	2	3	1	3	2
4.MR	2	1	1	4	3	1	3	2	3	3	3	3	3	3	3	3	3	3	3	3	3	1	1	3	3	1	3	3
5.MR	2	1	2	5	2	2	2	2	1	2	2	2	2	2	3	3	3	3	3	3	3	2	1	2	3	1	3	2
6.MR	3	1	1	4	3	2	3	2	1	3	3	3	3	3	3	3	3	3	3	3	3	3	1	1	3	1	3	3
7.MR	2	2	2	4	3	2	2	2	2	2	2	3	2	2	2	3	3	3	2	3	3	2	1	2	2	1	3	2
8.MR	3	2	1	4	3	2	3	2	1	3	3	3	3	3	3	3	3	3	3	3	2	2	1	1	3	1	2	3
9.MR	2	1	1	4	3	2	3	2	2	3	3	1	1	3	3	3	3	2	3	3	2	3	1	2	3	1	3	1
10.MR	2	1	2	5	3	2	2	4	3	3	3	3	3	3	3	3	3	3	2	2	3	1	1	2	3	1	3	3
11.MR	3	1	1	3	3	2	3	2	3	1	1	3	3	3	3	3	3	3	3	3	3	1	1	2	3	1	3	2
12.MR	2	1	1	3	3	2	3	2	1	3	3	3	3	3	3	3	3	3	3	3	2	2	1	3	1	1	3	2
13.MR	2	1	2	5	3	2	2	2	2	3	3	3	3	3	3	3	3	3	3	3	2	3	1	2	3	2	3	3
14.MR	2	2	2	5	2	1	2	2	2	3	3	1	3	3	3	3	3	3	3	3	3	2	1	3	3	1	3	3
15.MR	3	1	1	4	3	1	2	3	2	3	3	3	3	3	3	3	3	3	2	3	3	2	1	1	3	1	3	3
16.MR	2	1	2	4	3	2	2	2	2	3	3	3	3	3	3	3	3	3	3	3	3	3	1	2	3	1	3	3
17.MR	2	1	2	4	2	2	2	2	2	3	3	2	2	3	3	3	3	2	2	3	2	2	1	1	1	1	2	3
18.MR	2	1	1	3	3	2	3	2	2	3	2	2	3	2	2	3	3	2	2	3	2	2	1	1	2	2	2	2
19.MR	3	1	1	4	3	1	3	2	2	3	3	3	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
20.MR	3	1	1	3	3	1	3	2	2	3	3	3	3	3	3	3	3	2	3	3	3	1	2	3	3	1	3	2
21.MR	3	1	1	4	3	2	3	2	2	2	2	1	3	3	3	3	3	3	3	3	3	2	1	1	3	1	3	3
22.MR	2	1	2	4	3	2	3	2	2	1	1	2	3	3	3	3	3	3	3	3	1	3	1	3	3	1	3	3
23.MR	2	2	2	5	3	2	3	2	2	3	2	2	3	3	3	3	3	3	3	3	3	3	1	2	3	1	3	3
24.MR	2	1	2	3	3	1	3	2	2	3	3	3	3	1	3	3	3	3	3	2	1	1	1	3	3	1	2	3
25.MR	2	1	2	4	3	1	2	2	2	3	3	3	3	3	3	3	3	3	3	2	1	1	1	3	3	1	2	3

TABLE II: Coded table on Surinamese entrepreneurs

ORG.	A	S	G	E	Personal			Size		Internal Success								External Success				Leadership						
A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12	A13	A14	A15	A16	A17	A18	A19	A20	A21	A22	A23	A24	A25	A26	A27	A28	D1
1.SR	3	2	1	2	3	1	2	2	1	1	2	2	3	3	3	3	3	3	3	3	2	1	1	1	3	1	1	1
2.SR	4	1	1	5	3	1	2	2	1	3	2	2	3	3	3	1	3	2	3	3	2	2	1	3	3	1	2	2
3.SR	4	1	1	4	2	2	2	2	2	2	3	2	3	2	3	3	3	3	2	3	3	3	1	1	1	2	3	2
4.SR	3	1	2	5	2	2	2	2	1	2	2	2	2	2	2	2	2	3	2	3	3	1	2	1	2	1	2	3
5.SR	3	1	1	5	1	1	2	2	1	3	3	2	3	3	3	2	3	3	1	2	3	2	1	3	2	1	3	3
6.SR	2	2	2	2	3	1	2	2	2	2	1	2	2	3	3	3	3	2	3	2	2	3	1	2	3	1	3	3
7.SR	2	1	2	5	2	2	2	2	1	2	1	3	3	3	3	3	3	2	3	3	1	3	1	3	3	2	3	2
8.SR	3	2	1	4	2	2	2	2	2	3	3	3	3	3	3	3	3	2	3	2	2	3	1	3	2	1	2	1
9.SR	3	1	1	3	3	2	3	2	1	3	1	3	1	3	3	3	3	3	3	3	3	1	1	1	3	1	2	2
10.SR	3	1	1	4	3	2	3	2	2	3	3	3	3	3	3	3	3	3	3	3	3	1	1	2	3	1	3	3
11.SR	3	1	2	3	3	2	2	2	2	3	3	3	3	3	3	3	3	3	3	3	3	3	1	2	3	3	3	3
12.SR	2	1	2	4	3	2	3	2	2	1	1	1	1	3	3	3	3	3	3	3	3	2	1	2	3	1	3	3
13.SR	2	2	2	5	3	2	3	2	2	3	3	3	3	3	3	3	3	3	3	3	3	1	1	1	3	1	3	3
14.SR	3	1	1	3	2	1	2	2	2	3	3	3	3	3	3	3	3	3	3	3	2	1	1	3	3	1	3	3
15.SR	2	1	2	4	3	2	2	2	1	3	3	3	3	3	3	3	3	3	3	3	3	1	1	3	3	1	3	3
16.SR	3	1	2	5	3	1	2	3	3	3	3	3	3	3	3	3	3	3	3	3	1	1	1	2	3	2	3	3
17.SR	3	1	1	4	3	1	3	2	2	3	3	2	3	3	3	3	3	3	3	3	3	3	1	2	2	1	3	3
18.SR	2	1	1	3	3	1	3	3	1	3	3	3	2	3	3	3	3	3	1	3	2	3	1	1	3	1	3	2
19.SR	2	1	1	3	3	1	3	1	1	3	3	3	2	3	3	3	3	3	1	3	2	3	1	1	3	1	3	2
20.SR	3	1	1	2	3	1	3	2	1	3	2	3	3	3	3	3	3	2	3	3	3	2	1	1	3	2	3	2
21.SR	2	1	2	5	2	1	2	2	1	2	2	2	2	3	3	3	3	3	3	3	2	2	1	2	3	1	2	3
22.SR	4	1	2	5	3	1	2	3	2	2	2	3	3	3	3	3	3	2	3	3	3	3	1	3	3	1	3	3
23.SR	4	1	2	4	3	1	3	2	1	1	1	1	1	3	3	1	1	3	3	3	3	1	1	3	3	1	3	2

TABLE III: Coded table on Turkish entrepreneurs

ORG.	A	S	G	E	Personal			Size		Internal Success								External Success				Leadership						D1
A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12	A13	A14	A15	A16	A17	A18	A19	A20	A21	A22	A23	A24	A25	A26	A27	A28	
1.TR	3	1	1	4	2	2	2	2	1	3	3	2	3	3	3	2	3	3	1	3	1	1	1	3	1	3	3	
2.TR	3	1	1	5	3	1	3	2	1	3	3	2	3	3	3	3	3	3	3	3	3	2	1	2	3	1	3	2
3.TR	4	2	1	3	3	2	3	2	1	2	2	3	3	3	3	2	3	3	3	3	3	3	3	3	1	1	3	2
4.TR	3	1	1	5	3	2	2	3	3	3	1	3	2	3	3	3	3	3	2	3	3	3	3	1	2	1	2	2
5.TR	3	1	1	2	3	1	3	3	3	2	2	2	2	3	3	3	3	3	3	3	3	3	1	3	3	1	3	2
6.TR	3	2	1	3	3	1	3	3	3	2	2	2	2	3	3	3	3	3	3	3	3	3	1	3	3	1	3	2
7.TR	3	1	1	2	3	2	3	2	2	3	3	3	3	3	3	3	3	3	3	3	3	3	1	3	3	1	3	3
8.TR	4	1	1	5	3	1	2	2	2	2	2	2	3	3	3	3	3	3	2	3	3	3	1	2	2	1	2	3
9.TR	3	2	2	4	3	1	3	4	4	3	3	3	3	3	3	3	3	3	3	3	3	3	1	2	3	1	3	3
10.TR	2	1	2	5	3	1	3	2	1	1	1	1	1	3	3	1	3	2	1	1	2	1	1	3	2	1	2	2
11.TR	3	2	2	4	2	2	2	2	2	3	3	2	3	3	3	3	3	3	3	3	3	3	1	3	3	1	3	3
12.TR	2	1	2	4	3	1	2	2	2	3	3	1	1	3	1	3	3	2	3	3	1	1	1	2	3	1	1	3
13.TR	2	1	2	5	3	1	3	2	2	3	3	2	2	3	2	2	2	3	3	2	1	3	2	3	3	2	3	2
14.TR	2	1	1	4	3	1	3	4	4	3	3	3	3	3	3	3	3	3	3	3	3	3	1	2	3	1	3	3
15.TR	2	1	1	2	2	1	2	2	2	3	3	2	2	3	3	2	3	3	3	1	3	1	1	3	3	1	3	3
16.TR	2	1	2	3	3	2	2	2	2	3	3	3	3	3	3	3	3	2	3	3	3	2	1	1	2	1	2	3
17.TR	3	1	1	4	3	1	2	2	1	3	2	2	3	3	3	3	3	3	3	2	3	3	1	3	3	1	3	3
18.TR	3	1	1	2	2	1	2	3	1	2	3	2	3	3	3	3	3	2	2	3	2	2	1	1	3	1	2	3
19.TR	3	1	1	3	3	1	3	4	2	2	2	3	3	3	3	3	3	3	3	3	3	3	1	1	3	1	3	3
20.TR	4	1	1	2	3	1	2	2	1	3	3	1	2	3	3	3	3	2	3	3	2	3	1	2	2	1	3	3
21.TR	3	1	1	5	3	1	3	2	1	3	3	2	3	3	3	3	3	3	3	3	3	2	1	2	3	1	3	3
22.TR	3	1	1	4	3	1	2	2	2	3	3	3	3	3	3	3	3	3	3	3	3	2	1	1	1	1	3	3
23.TR	2	2	2	5	3	2	3	2	2	1	1	1	3	3	2	2	3	3	3	3	3	3	1	3	3	1	3	2
24.TR	4	2	1	5	3	2	3	2	1	2	2	2	2	2	2	2	2	3	2	3	3	1	2	1	2	1	2	3
25.TR	4	1	1	6	3	1	3	2	1	3	3	2	3	3	3	2	3	3	3	3	3	3	1	2	3	1	3	3
26.TR	3	1	1	5	2	2	2	2	1	2	2	3	3	3	3	3	3	3	3	2	1	1	1	3	1	2	3	3
27.TR	2	1	1	5	3	2	3	2	1	3	3	3	3	3	3	3	3	2	2	2	2	3	3	1	1	2	3	3
28.TR	4	1	1	4	3	2	3	3	1	3	3	3	3	3	3	3	3	3	3	3	3	2	1	1	3	1	3	3
29.TR	2	1	2	5	3	2	3	2	2	3	3	2	3	3	3	3	3	3	3	3	2	2	1	2	3	1	3	3
30.TR	4	1	1	4	3	1	2	2	1	3	3	2	3	3	3	3	3	3	3	3	2	3	3	3	2	3	3	3
31.TR	4	1	1	4	3	1	2	3	1	3	3	3	3	3	3	3	3	3	3	3	2	2	1	2	3	1	3	3
32.TR	3	1	1	2	3	1	3	2	1	2	2	2	2	3	3	3	3	3	3	3	3	2	1	2	2	1	3	2
33.TR	2	1	2	2	3	3	3	3	1	3	3	3	3	3	3	3	3	3	3	3	3	3	1	3	3	1	3	2
34.TR	3	1	1	4	3	1	2	2	1	3	3	3	3	3	3	3	3	3	3	3	3	2	1	2	2	1	3	2
35.TR	4	1	1	2	3	2	3	3	1	3	3	3	3	3	3	3	3	3	3	3	3	2	1	2	3	1	3	3

Legend:

ORG: Ethnic Origin
A: Age
S: Sex
G: Gender
E: Education